AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An odor sensor in which the electric conductivity thereof is varied in response to odor, the odor sensor including ~~characterized by comprising~~:

a mixed material in which β-carotene and a reducing agent to prevent the oxidation of the β-carotene are dispersed in a viscous liquid, wherein the reducing agent is any of sodium thiosulfate($Na_2S_2O_3$), hydro nicotinamide adenine dinucleotide phosphate (NADPH), Na2(H2PO2) and L-ascorbic acid and the viscous liquid is a liquid with high viscosity and polarity; and

a cathode electrode and an anode electrode that are disposed so as to be in contact with the mixed material,

wherein odor of an odorant is detected when the β-carotene in the mixed material absorbs and reacts with the odorant causing electric conduction property variation between the cathode electrode and the anode electrode.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The odor sensor according to claim [[3]] 1, ~~characterized in that~~ wherein the liquid with high viscosity and polarity is glycerin.

5. (Currently Amended) The odor sensor according to claim 1, ~~characterized in that~~ wherein ethanol is further mixed as a viscosity modifier.

6. (Currently Amended) The odor sensor according to claim 1~~, characterized by~~ having a structure in which the mixed material is sandwiched with the cathode electrode and the anode electrode facing each other.

7. (Currently Amended) The odor sensor according to claim 1, ~~characterized in that~~ wherein:

the cathode electrode is a copper plate or a platinum plate;

the anode electrode is a mesh-shaped stainless-steel net; and

the cathode electrode and the anode electrode face each other.

8. (Currently Amended) The odor sensor according to claim 1, wherein ~~characterized in that~~:

the cathode electrode is a copper plate or a platinum plate;

the anode electrode is a mesh-shaped platinum net; and

the cathode electrode and the anode electrode face each other.

9. (New) An odor sensor in which the electric conductivity thereof is varied in response to odor, the odor sensor comprising:

a mixed material including β-carotene and a reducing agent dispersed in a viscous liquid, the reducing agent preventing the oxidation of the β-carotene, wherein the reducing agent is at least one of sodium

thiosulfate($Na_2S_2O_3$), hydro nicotinamide adenine dinucleotide phosphate (NADPH), Na2(H2PO2) and L-ascorbic acid; and

a cathode electrode and an anode electrode disposed to be in contact with the mixed material,

wherein odor of an odorant is detected when the β-carotene in the mixed material absorbs and reacts with the odorant causing electric conduction property variation between the cathode electrode and the anode electrode.

10. (New) An odor sensor in which the electric conductivity thereof is varied in response to odor, the odor sensor comprising:

a mixed material including β-carotene and a reducing agent dispersed in a viscous liquid, the reducing agent preventing the oxidation of the β-carotene, wherein the viscous liquid is a liquid with high viscosity and polarity; and

a cathode electrode and an anode electrode disposed to be in contact with the mixed material,

wherein odor of an odorant is detected when the β-carotene in the mixed material absorbs and reacts with the odorant causing electric conduction property variation between the cathode electrode and the anode electrode.

11. (New) A method of detecting odor performed by an odor sensor that varies electric conductivity in response to odor, the method comprising:

dispersing β-carotene and a reducing agent in a viscous liquid, the reducing agent preventing the oxidation of the β-carotene, wherein the viscous liquid is a liquid with high viscosity and polarity;

disposing a cathode electrode and an anode electrode such that the cathode electrode and the anode electrode are in contact with said dispersed viscous liquid; and

detecting odor of an odorant when the β-carotene absorbs and reacts with the odorant to cause electric conduction property variation between the cathode electrode and the anode electrode.

12. (New) A method of detecting odor performed by an odor sensor that varies electric conductivity in response to odor, the method comprising:

dispersing β-carotene and a reducing agent in a viscous liquid, the reducing agent preventing the oxidation of the β-carotene, wherein the reducing agent is at least one of sodium thiosulfate($Na_2S_2O_3$), hydro nicotinamide adenine dinucleotide phosphate (NADPH), Na2(H2PO2) and L-ascorbic acid;

disposing a cathode electrode and an anode electrode such that the cathode electrode and the anode electrode are in contact with said dispersed viscous liquid; and

detecting odor of an odorant when the β-carotene absorbs and reacts with the odorant to cause electric conduction property variation between the cathode electrode and the anode electrode.

13. (New) The odor detecting method according to claim 12, wherein the viscous liquid is a liquid with high viscosity and polarity.